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Original Article

Frontalis Sling Procedure Using Prolene Material in Severe Ptosis

MA Hossain[1], MS Ahmed[2], MS Uddin[3]

Abstract:

Abnormally low position (drooping) of the upper eye lid is called ptosis. Common practices in correction of ptosis are different types of surgical procedures like, Fasanella-Servat procedure, Levator resection, Frontalis brow suspension (sling), Aponeurosis strengthening etc. In sling operation different types of materials are used, like, autogenus fascialata, cadaver fascilata, skin, sclera, collagen and artificial eg. Prolene, ethibond, silicone, supramid, mersilene mesh, goretex etc. The aim of study is to establish that use of prolene in sling operation gives better result. The study was carried out at BSMMU. A total thirty cases were selected for study. Technique of operation was Frontalis brow suspension (sling) procedure using prolene. The follow-up period was three months to six months. Final outcome of ptosis correction was good outcome in 24 (80%) patients out of 30. So prolene use in sling operation has excellent tensile strength, good handling properties, permanent result and better tolerance.

Key words: Ptosis position of upper eye lid, Prolene, Sling Operation.

Introduction:

Abnormally low position(drooping) of the upper eye lid is called ptosis. It is either congenital or acquired. The basic defect may occur in the upper lid levator muscle (Myogenic), motor nerve supply (Neurogenic), apponeurosis (Apponeurotic) and swelling (Mechanical)[1]. It may cover a significant portion of the cornea and the pupillary aperture so as to create visual impairment. Ptosis may be graded as mild (up to 2mm), moderate (3 mm) and severe (4 mm or more). On the basis of levator function ptosis may be regarded as ptosis with normal levator function (15 mm or more), good (12-14 mm), fair (5-11 mm) and poor levator function (4 mm or less). On the basis of severity of ptosis, levator function and other associated features different surgical techniques have been developed. These are- Fasanella-Servat procedure, Levator resection, Frontalis suspension, Aponeurosis repair, etc[2]. The treatment of the Ptosis requires accurate and consistent evaluation and measurement as well as skillful use of surgical technique to implement a functional and aesthetic correction. In cases of severe ptosis (>4mm) with poor Levator palpebrae superioris (LPS) function (<4mm), Frontalis Sling is the procedure of choice[2].

1.Dr. Md. Amjad Hossain, MBBS, DO, MCPS, MS (Ophthalmology), Assistant professor, Department of Ophthalmology, Faridpur Medical college, Faridpur.

2. Dr. Md. Sharfuddin Ahmed, MBBS, DO, MS (Ophthalmology), Associate professor, Department of Ophthalmology, BSMMU, Dhaka, Bangladesh.

3. Prof. Md. Saleh Uddin, MBBS, FCPS, MS, MHPED, Chairman, Department of Ophthalmology, Dean, Faculty of Surgery, BSMMU, Dhaka, Bangladesh.

Address of correspondence :
Dr. Md. Amjad Hossain, MBBS, DO, MCPS, MS (Ophthalmology), Assistant professor, Department of Ophthalmology, Faridpur Medical College, Faridpur. Mobile No: +88-01715303227,
E-mail: dr.amjad63@gmail.com

Materials and Methods:

The study was conducted at BSMMU, Dhaka in the department of ophthalmology from January, 2005 to December, 2006. A total 30 eyes of 25 cases were selected for study. All the patients had severe degree of ptosis (>4mm) and with poor levator function (<4mm) were included in this study. Age of the patients were between 18-50 years. The operation was done under microscope. Written informed consent was obtained from each patient. All the study patients were undergone ptosis correction by a single competent surgeon. Frontalis sling was performed by modified Crawford technique. Topical anesthesia (0.4%) as drop and 2% lignocaine injection were used as anesthesia.

To make 3 stab incisions in the brow down to the periosteum with a No. 15 Bard-Parker knife. Make the lateral incision 0.5 cm above the orbital rim (at the upper border of the eyebrow) and 0.5 cm temporal to a line drawn perpendicularly above the lateral canthus. The second incision is made 0.5 cm above the orbital

rim and 0.5 cm nasal to a line drawn perpendicular to the inner canthus. Always make the lateral incision first because the brow is fairly vascular, and if the nasal and middle incisions are made first, the blood flows over the operative site, making the lateral incision difficult. Place a Halsted hemostat in the base of each incision and spread to create a wide base for the location of the knot of fascia. Pressure over the 3 incisions provides hemostasis.

To place a 4-0 black silk traction suture in the tarsus and pass the needle in and out of the gray line in the center of the lid. To place a Storz lid plate (#E2504), which has a knurled knob at the end, under the lid, and fasten the traction suture to the knob to put the lid on constant stretch. A protective contact lens may also be used to protect the eye, but the author finds the lid plate more flexible. To make 3 horizontal stab incisions, 2 mm long, in the upper lid 1 mm above the cilia line through the skin and pretarsal muscle to the tarsus. To place the temporal incision 3 mm from the medial canthus, the middle incision in the center of the lid, and the nasal incision 3 mm from the medical canthus.

With the lid plate in place, to insert an empty Wright needle (Storz #E954) into the middle brow incision to the depth of the periosteum. To pass it across the orbital rim without incorporating periosteal fibers of the linea alba. To direct the needle inferiorly and posteriorly to pass behind the orbital septum and then superficially into the lid anterior to the tarsal plate to emerge through the lid incision. Thread the 4/0 prolene suture through the needle until the center of the suture is reached. Then withdraw the needle, pulling the doubled prolene through the middle incision and out the middle brow incision. Cilia must not be pulled into the tract with the prolene, since this increases the possibility of infection. To cut the doubled prolene at the needle, making 2 strips of equal length that is used to produce the double rhomboids.

At the end of the procedure, a Frost suture of 6-0 black silk is usually placed, allowing closure of the eye(s) by fastening the lower lid to the forehead with adhesive strips. Some patients have fared well using ointment liberally once discharged. In this situation, emphasize to the patient or parents that large amounts of ointments are necessary, since the eye is most at risk of exposure during the first 24-48 hours when the lids are sore and closure is poor. If a Frost suture is placed, dress the eye with antibiotic ointment and a pressure patch for 24 hours. Oral broad spectrum antibiotic were prescribed for all patients for 1 week. Topical antibiotics and lubricants were routinely used for the first week and then as required. Patients were followed up 24,72 hours after operation and then patients were seen after 1 week, 1 month, 3 months and 6 months of surgery.

Result:

Total 30 eyes of 25 patients were undergone ptosis correction by using prolene. Among them, male patients were 11 and female patients were 14. Age of the patients below 20: male 5(20%) and female 2 (8%). Age of the patients above 20: male 6 (24%) and female 12 (48%) (Table I). Unilateral ptosis 20 (66.67%), Bilateral ptosis (Table II) 10 (33.33%), good outcome 24 (80%), poor outcome 6 (20%) (Figure I).

Table-I: Shows age and sex distribution of study subjection (n=30)

Age in years	Male		Female	
	No. of cases	%	No. of case	%
<20	05	20	02	08
20	06	24	12	48

Table-II: Distribution of laterality of ptosis (n=30)

Laterality	No. of patients (no. of ptosis)	%
Unilateral Ptosis	20(20)	66.67
Bilateral Ptosis	05(10)	33.33

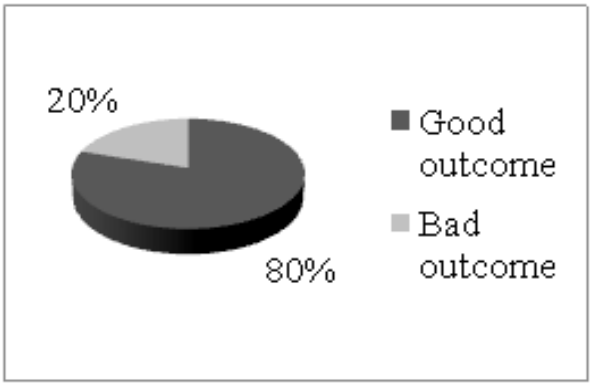

Figure I: Pie chart diagram visualizing the result

Discussion:

Under correction, over correction or recurrence of ptosis operation is a problem. So, ptosis requires accurate and consistent evaluation and measurement as well as skillful use of surgical technique to implement a functional and aesthetic correction.

Prolene is an artificial material, in comparison with other artificial materials, its advantages are that it is cheap, easily available, can be used before 3 years of

age where surgery cannot be delayed because of threatened amblyopia. It is totally inert as well as being monofilament has low infection rates. Its disadvantages are granuloma formation, extrusion, late failure. In the study that of Rai et al, they have not noticed granuloma formation, extrusion and infection in any case with a good success rate in ptosis correction[3].

In the current study mean age was 25.16 years ±9.16. Male was 44% and female was 56%. Out of 25 patients, 7 (28%) were <20 years old and the rest 18 (72%) were ≥ 20 years old. Lee et al showed that median age of 5.5 (0.4-15.9 years), 63% of the patients were males and median follow up was 8.7 (1.5-129) months: 58% patients completed a 6 month follow up[4]. In current study mean age was higher, because in our country ptosis patients come for management in older age due to many superstitions. In the female has reflected more proportion among the total subjects. In the current study all the patients had completed six month follow up. The sources of material used in sling formation are natural e.g. autogenous fascia lata, cadaver (preserved homogenous) fascia lata, skin, sclera, collagen and artificial e.g. prolene, ethibond, silicone rods,supramidmersilene mesh, Goretex. Each material has its own advantages, disadvantages and complication.

In the current study, in the final follow up after 6 months of surgery, mean palpebral height was 7.73 mm, pre-operatively which was 3.03 mm. In this study, outcome of ptosis correction was defined as good outcome if the lids were within 1mm height with an acceptable skin crease and contour with no corneal exposure and as poor outcome if re-operation was required or advocated (complete failure). Finally 80% patients achieved good outcome, 20% had poor outcome. This result is comparable with the result of other researchers. In the study that of Rai et al good outcome with satisfactory cosmetic and functional results were noted in 84.6% cases, suboptimal outcome with under correction of >02mm ptosis was noted 11.5% cases, poor outcome with complete recurrence was noted in 3.8% case[3]. Lee et al achieved 77% good outcome 10% suboptimal outcome and 12% poor outcome[4]. Baggio et al. found general outcome- good in 90% of cases, insufficient in 5% cases and unsatisfactory in 5% of cases[5].

The common complication encountered in the current study was under correction; next to it was spontaneous suture rapture (10%). No stitch granuloma or infection was observed in the current study. Baggio et al noticed 2 for over correction (5%) and 4 for under correction (10%)[5]. They also observed postoperative complications including 1 case of persistent lid edema and 4 cases of spontaneous suture rapture. Rai et el[3] and Manners et al[6] observed no stitch granuloma and infection in frontalis suspension operation with prolene suture. Total 5-15% incidence of poor outcome with autogenous fascia frontalis suspension was observed by Lee et al[4]. With merslene mesh poor outcome was also around this figure. In the current study poor outcome with prolene was observed 20% which is comparable with other materials although this material is very cheap and easily available.

Conclusion:

The analytical result of this study shows that Prolene is effective and safe as a material for brow suspension in the management if severe ptosis with poor lavatory functions. In the study of a relatively smaller case series of shorter duration follow up, Prolene has been found to have few postoperative complications. Further studies of large scale samples and longer duration follow-up is necessary to have final inference.

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